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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,313

08/11/2006

Shinichiro Isobe

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EXAMINER

YANG, JAY

ART UNIT

PAPER NUMBER

1786

NOTIFICATION DATE

DELIVERY MODE

07/23/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ddalecki@wenderoth.com  
coa@wenderoth.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,313	<b>Applicant(s)</b> ISOBE, SHINICHIRO	
	<b>Examiner</b> J. L. YANG	<b>Art Unit</b> 1786	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>05/19/10</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/31/10 has been entered.

### ***Claim Rejections – 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 9 is rejected under 35 U.S.C. 112, 2<sup>nd</sup> paragraph. Claim 9, which is dependent on Claim 1, recites the limitation “2,3,4,5-tetraphenylthiophene derivative”. There is insufficient antecedent basis for this limitation in the claim as Claim 1 only recites Y = oxadiazolopyridine derivatives.

### ***Claim Rejections – 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

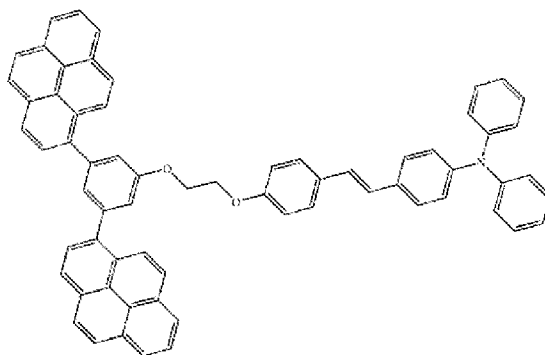
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (US 2004/0219387 A1) in view of VanSlyke et al. (US 4,720,432 A) and Tashiro et al. (US 5,059,863 A).

Li et al. discloses an organic EL device comprising an emission layer (103, Fig. 1) that comprises a compound of the formula  $H_0-(X-(R)_m-X-G)_n$  ([0024]) where  $X = O, S$ ,  $R =$  alkyl group,  $G =$  chromophore, and  $H_0 =$  conjugated chromophore with hole-transporting or electron-transporting properties ([0034]). Li et al. discloses the following embodiment:

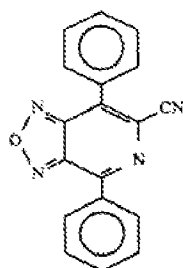


((ii), page 4) such that  $L = A_1-R_1-A_2$  where  $R_1 =$  alkylene group (ethylene),  $A_1 =$  heteroatom (oxygen), and  $A_2 =$  ether group and  $Y =$  polycyclic aromatic compound

Art Unit: 1786

(substituted pyrenyl phenyl). However, Li et al. does not disclose X or Y as recited in the claim. Nevertheless it would have been obvious to let  $H_0$  = anthracene in the formula as disclosed by Li et al. as shown above such that X = anthracene in the formula as claimed by the Applicant. The motivation is provided by the fact that Li et al. allows  $H_0$  = host material including aromatic aryl groups and polycyclic fused groups or combinations thereof, in addition to the fact that anthracene is a known host material for use in organic EL devices as disclosed by VanSlyke et al. (col. 1, line 32), rendering such an incorporation predictable with a reasonable expectation of success.

Tashiro et al. discloses the following organic luminescent compounds:



(col. 7, (9)) as material for the organic luminescent layer such that  $R_1 = R_2 = \text{phenyl}$ .

Tashiro et al. further discloses that the cyanide group can be replaced by hydrogen (col. 2, lines 14-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the light-emitting compound as disclosed by Tashiro et al. as the chromophore in the compound in the organic EL device as disclosed by Li et al. in view of VanSlyke et al. The motivation is provided by the fact that the light-emitting compound as disclosed by Tashiro et al. exhibits high luminance even at a low driving voltage (col. 1, lines 44-45), in addition to the fact that Li et al. discloses that G = conjugated chromophores having at least one nitrogen and heteroaromatic rings

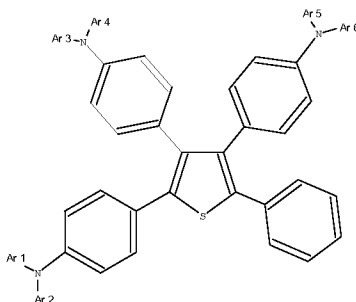
Art Unit: 1786

([0036]), which renders the substitution predictable with a reasonable expectation of success.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (US 2004/0219387 A1) in view of VanSlyke et al. (US 4,720,432 A), Tashiro et al. (US 5,059,863 A), and Nakatsuka et al. (JP 2003-151778 A).

Li et al. in view of VanSlyke et al., Tashiro et al., and Nakatsuka et al. discloses the organic EL device of Claim 1 as shown above. However, they do not explicitly disclose a light-emitting group such that Y = 2,3,4,5-tetraphenylthiophene derivative.

Nakatsuka et al. discloses the following compound:



(1) where Ar<sub>1</sub>-Ar<sub>5</sub> = aryl group as a light-emitting element in an organic EL device ([0043]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the light-emitting compound as disclosed by Nakatsuka et al. for the light-emitting component in the compound in the organic EL device as disclosed by Li et al. in view of VanSlyke et al. and Tashiro et al. The motivation is provided by the fact that the light-emitting compound as disclosed by Nakatsuka et al. is an identified light-emitting compound that can be effectively used in organic EL devices, in addition

Art Unit: 1786

to the fact that Li et al. discloses that G = conjugated chromophores having at least one nitrogen and heteroaromatic rings ([0036]), which renders the substitution predictable with a reasonable expectation of success.

### ***Response to Arguments***

1. The Applicant argues on page 5 that Li et al. and Tashiro et al. and Nakatsuka et al. do not separately teach or suggest the combination of features recited in Claim 1. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

2. The Applicant argues on page 5 that Li et al. only discloses a multi-layer organic EL device and does not disclose a single layer EL device. The Examiner disagrees. Li et al. discloses an organic EL device comprising just the substrate, anode, light-emitting layer, and cathode in that order (Fig 1., [0020]) as a possibility. Thus, it is the position of the Examiner that one of ordinary skill in the art at the time of the invention, incorporating the knowledge as obtained from Li et al. in combination with the references used in the rejections in this Office Action, reasonably be expected to meet the driving voltage requirements as mentioned on page 5, thus rendering the invention nonobvious over the prior art.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. L. YANG whose telephone number is (571)270-1137. The examiner can normally be reached on Monday to Thursday from 8:30 am to 6:00 pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on (571)272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 1786

/J. Y./  
Examiner, Art Unit 1786